UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,659	10/29/2001	Dave Good	1-22813	9889

4859 7590 06/13/2003

MACMILLAN SOBANSKI & TODD, LLC
ONE MARITIME PLAZA FOURTH FLOOR
720 WATER STREET
TOLEDO, OH 43604-1619

EXAMINER	
KERNS, KEVIN P	

ART UNIT	PAPER NUMBER
1725	6

DATE MAILED: 06/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/045,659	GOOD ET AL.	
	Examiner	Art Unit	
	Kevin P. Kerns	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4 and 6-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4 and 6-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *13 May 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Invention I (claims 1, 2, 4, and 6-8) in Paper No. 3 is acknowledged. The applicants have cancelled non-elected claims 3, 5, and 9 in the applicants' amendment (paper #5) received by the USPTO on May 13, 2003.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Balevski et al. (US 3,961,662).

Balevski et al. disclose a method for controlling the rate of filling of casting molds, in which a countergravity casting apparatus contains a conduit in fluid communication between a molten metal furnace and a mold cavity, and the filling takes place under the action of gas pressure (abstract; column 1, lines 5-8 and 59-65; and Figure 3). The apparatus includes manometers 3,4 (pressure transducers) that emit signals to a differentiating unit 6 and comparing unit 7, to be transmitted to a (pressure) control unit 10 (abstract; column 2, lines 33-38; column 3, lines 28-44; column 4, lines 1-12; and

Figure 3). The process includes a predetermined program (controller) that controls the filling rate (based upon the variation of pressures P1 and P2 to obtain the desired filling profile, such that 1st and 2nd kinetic energy values would inherently occur -- see Figure 1), in which the filling rate decelerates from a 1st rate to a 2nd rate that does not exceed the 1st rate over the incremental time interval (the time interval before t1, as compared to the time interval between t1 and t2), as shown in Figure 1 (column 2, lines 4-17 and 39-68; column 3, lines 1-20; and Figure 1).

4. Claims 1, 2, 4, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishida et al. (US 4,741,381).

Nishida et al. disclose a method and apparatus for controlling pressure in a holding furnace (casting chamber) in a low pressure die-casting system, in which a tube from the furnace is in fluid communication with the mold cavity (abstract; column 1, lines 9-16; and Figures 1-3). The apparatus includes at least one pressure sensor 13,18 (transducer) and a microcomputer 10 (controller) that controls a desired pressurization pattern (changeable pressure upon addition of gas) as a function of time (abstract; column 1, lines 61-68; column 2, lines 1-25 and 56-68; column 3, lines 1-44; column 4, lines 5-56; column 6, lines 41-44; and Figures 1-5). The pressurization pattern shows a series of inflection points (effecting pressure/filling rate changes), such that the time interval before point J has a higher gas pressure, and thus a higher filling rate (thus resulting in inherent 1st and 2nd kinetic energy values), than the time interval between point J and point J+1 (column 5, lines 32-68; column 6, lines 1-33; and Figure 4).

5. Claims 1, 2, 4, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsubayashi et al. (US 5,551,502).

Matsubayashi et al. disclose a pressurizing control method and system for low-pressure (countergravity) casting, in which the casting apparatus includes a melting furnace and a tube extending into a mold cavity for filling with molten metal, and further includes a pressure sensor 10 (transducer) and pressurizing control system 23 (controller) for adjusting the pressure of pressurized air through conduit 24 and achieving a plurality of pressurizing patterns (abstract; column 1, lines 7-10; column 2, lines 60-67; column 3, lines 1-22; column 4, lines 10-16 and 57-61; column 5, lines 17-28; and Figure 2). Pressure correction and converting are calculated on the basis of one or more pressure differences, such that filling rates are adjusted, as the time interval between 0 and T1 has a more rapid filling rate (and has a more rapidly increasing pressure) than the subsequent slope between T1 and T2, decelerating and not exceeding the first rate, such that these two filling rates correspond to differing and inherent 1st and 2nd kinetic energy values (column 5, lines 35-67; column 6, lines 1-64; and Figures 3 and 4).

6. Claims 1, 2, 4, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by the applicants' admitted prior art (specification; and Figures 1 and 3).

The applicants' admitted prior art discloses a conventional countergravity casting apparatus with the following structures that are common to those disclosed in the (prior

art) Kuhn et al. reference (US 5,215,141): a mold 12, a supply conduit 76 connecting the mold 12 to a crucible furnace 14 (casting chamber), a pressure transducer 52 (104 in Kuhn et al.), a pressure controller 54 (98 in Kuhn et al.), and a supply of molten metal 16 (specification; page 1, lines 12-24; page 5, lines 8-10; page 15, lines 8-9; and Figure 1). As shown in Figure 3 (prior art desired fill profile 112), the rate of pressure increase (and hence the filling rate), is reduced in the time interval spanning t1 and t2, as opposed to the time interval between t0 and t1, in which the 2nd filling rate (corresponding to an inherent 2nd kinetic energy value) decelerates and thus does not exceed the 1st filling rate, which corresponds to an inherent 1st kinetic energy value (specification; page 10, 3rd line through page 15, 9th line; and Figure 3).

Response to Arguments

7. The examiner acknowledges the applicants' amendment (paper #5) received by the USPTO on May 13, 2003. The amendment overcomes the prior objections to the drawings, title, specification, and claims (in paragraphs 6-10 of the prior office action mailed January 15, 2003), and the applicants' proposed drawing corrections are approved. The applicants have cancelled non-elected claims 3, 5, and 9 in their amendment, such that claims 1, 2, 4, and 6-8 remain under consideration in the application.

8. Applicant's arguments filed May 13, 2003 have been fully considered but they are not persuasive.

With regard to the applicants' comments/arguments that address the prior art rejections on pages 10-12 of the amendment, the examiner notes that the applicants have amended independent claims 1, 4, and 6 to include new limitations addressing 1st and 2nd kinetic energy values, each of which are imparted by corresponding 1st and 2nd pressures during the filling process. The filling of the mold then decelerates from the 1st rate to the 2nd rate, thereby dissipating kinetic energy of the flow and resulting in reduced turbulence in the filling of the mold. However, the teachings of Balevski et al. (Figure 1), Nishida et al. (Figure 4), Matsubayashi et al. (Figures 3 and 4), and the applicants' admitted prior art (Figure 3), as set forth in paragraphs 3-6 above, all set forth filling rates (pressure versus time graphs) with differing slopes, with 1st slopes greater than 2nd slopes in all instances (reduced fill rate). Since flow velocity is directly proportional to kinetic energy, these two flow rates would inherently have two respective kinetic energy values (also see new underlined portions of paragraphs 3-6 for discussion of these kinetic energy values). The examiner respectfully suggests that the applicants consider incorporating limitations that show detailed control method steps that result in the filling profile of their (inventive) Figure 4. Although the references cited above disclose the claimed invention as claimed, it is noted that none of the prior art of record shows such a fill profile of the applicants' Figure 4.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin P. Kerns whose telephone number is (703) 305-3472. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-6078 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

KPK
kpk
June 9, 2003

M. ALEXANDRA ELVE
PRIMARY EXAMINER